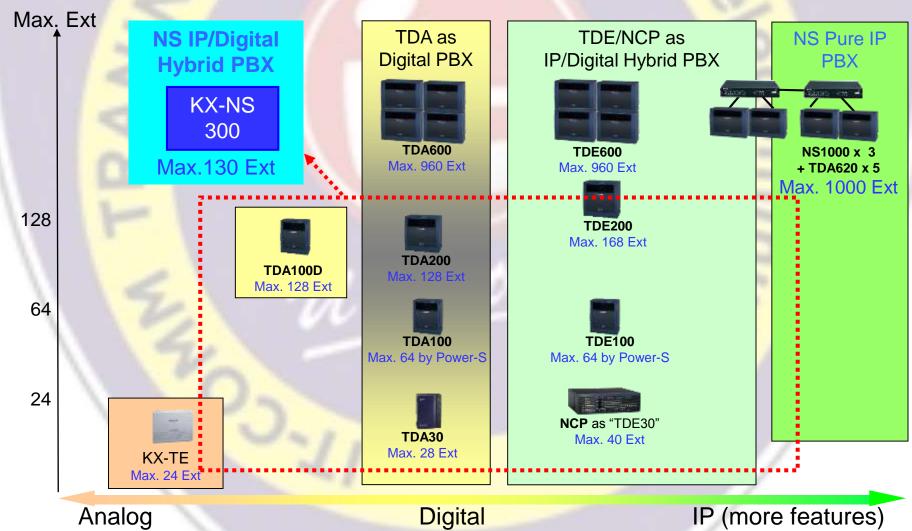
Document for Technical and Sales Training

KX-NS300 Basic Specification

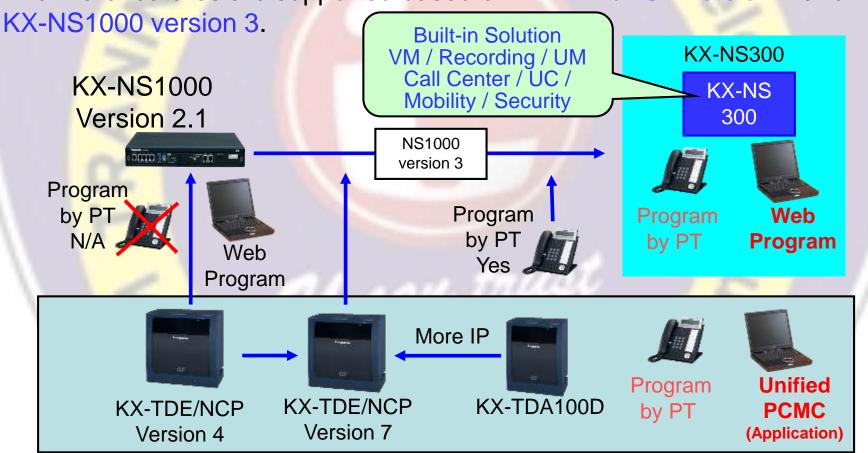
1. Introduction (PBX Line-up)

KX-NS300 is successor of KX-TDA/TDE100-200 and KX-NCP with built-in solution based on KX-NS1000.



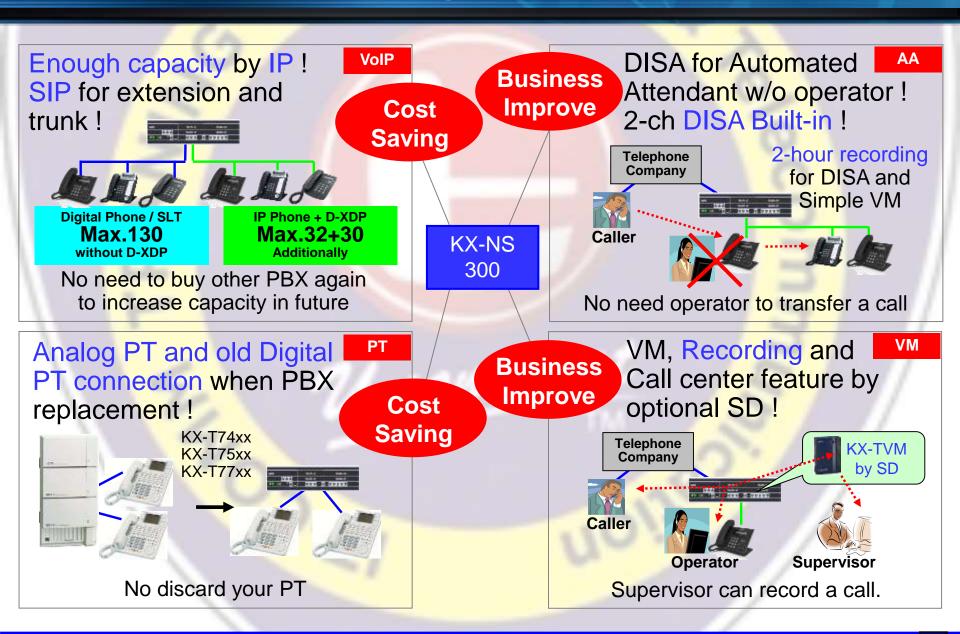
2. Introduction (Feature)

KX-NS300 provides same features and same operations as KX-TDA100D. And more features are supported based on KX-TDE/NCP version 7 and



Web programming is supported instead of Unified PCMC. Programming by PT is also supported. The specification is same as KX-TDA.

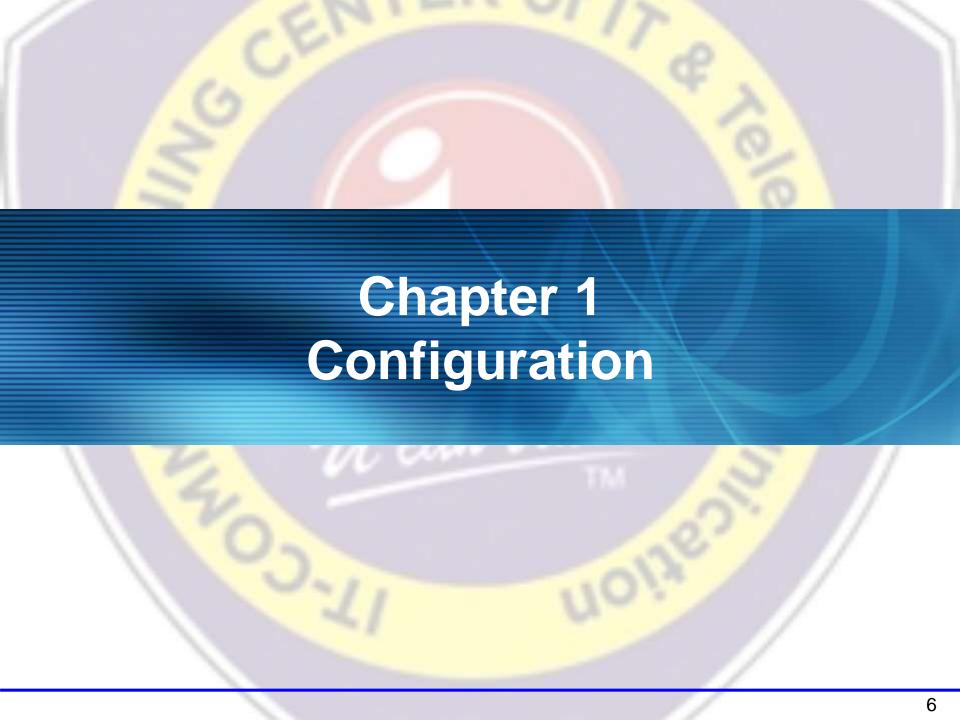
3. One Page Sales Point



4. Table of Contents

Chapter	Contents		
1	Configuration		
2	More features compare to KX-TDA100D		
3	Optional Card		
4	Activation Key		
5	Installation		
6	Difference from KX-NS1000		

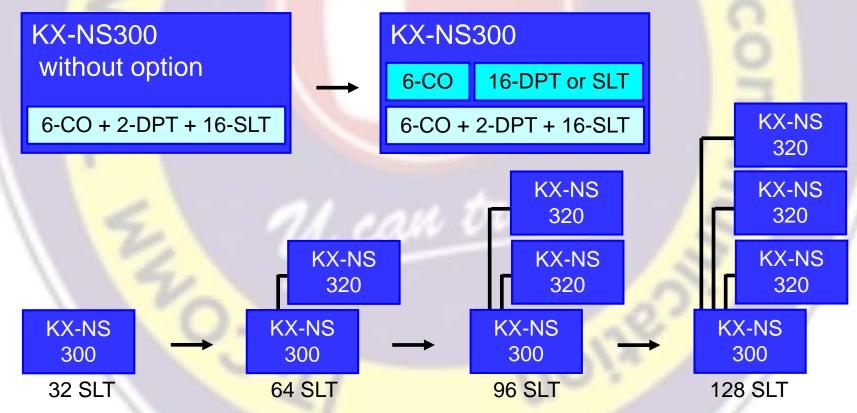
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11. Expandability

KX-NS300 has expandability with optional cards and expansion cabinets.

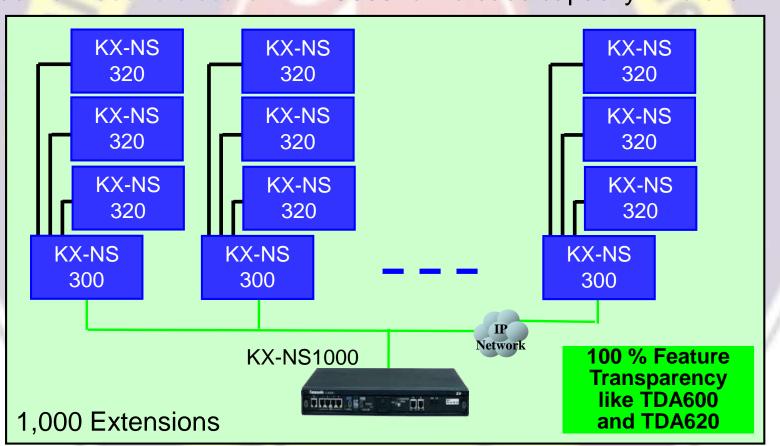
- 48 Analog CO or 4 PRI/E1 with 6 Analog CO
- 128 SLT with 2 Digital PT or 64 SLT with 66 Digital PT (without D-XDP) You do not need to discard KX-NS300 to increase capacity in future.



Connection is like KX-TDA600 and KX-TDA620.

12. Expandability

Capacity can be increased to 1,000 extensions using KX-NS300 version 2 software with KX-NS1000. (Hardware of KX-NS300 version 2 is same as version 1.) You do not need to discard KX-NS300 to increase capacity in future.

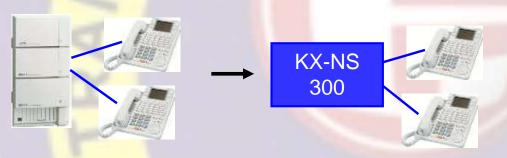


Max. 15 KX-NS300 with KX-NS320 can be slave unit of KX-NS1000. KX-NS1000 works as "KX-TDA600". KX-NS300 with KX-NS320 works as "KX-TDA620".

13. Compatibility for Telephone

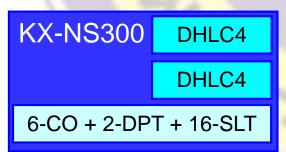
KX-NS300 has compatibility with Analog PT and old Digital PT.

You do not need to discard KX-T74xx / KX-T75xx Digital PT for KX-TD series PBX such as KX-TD816 and KX-TD1232, when you upgrade PBX to KX-NS300.



Optional DHLC4 card is required to connect Analog PT or KX-T74xx / KX-T75xx Digital PT.

KX-NS300 with 3 x KX-NS320 supports 8 DHLC4 cards for 32 these phones.





<Compatible PT>

APT	KX-T77xx
Old DPT	KX-T74xx KX-T75xx
New DPT	KX-T76xx KX-DT3xx KX-DT5xx
IP Phone	KX-NT265 KX-NT3xx KX-NT5xx KX-UTxxx

KX-NT136, KX-NT400 and KX-HGT100 are not supported.

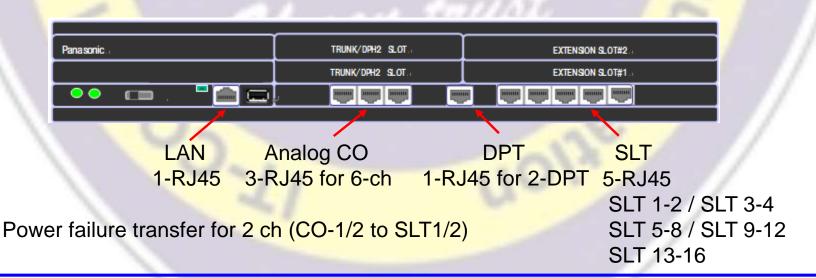
DHLC4 supports KX-T76xx, KX-DTxxx and SLT also. XDP and Digital XDP are available.

14. Built-in for Main Cabinet

You can save cost because required hardware is built-in for KX-NS300.

- 2-ch DISA or Simple VM / Recording time: 120 min
 (Simple VM specification is same as ESVM2 card on OPB3 card of KX-TDA100D.)
- Digital PT 2-port (+ 2 D-XDP)
- SLT 16-port with caller ID and message waiting
- Analog CO 6-port with caller ID
 Analog CO can be changed to paging port or external BGM port.
- 2-ch internal BGM (WAV file can be saved.)
- LAN port (10/100 Base TX) / USB port
- Power supply / External battery port

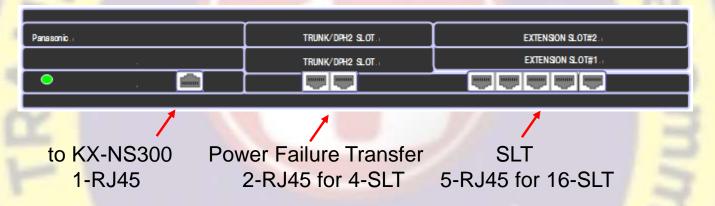
RS232 is not supported. SMDR is available using LAN.



15. Built-in for Expansion Cabinet

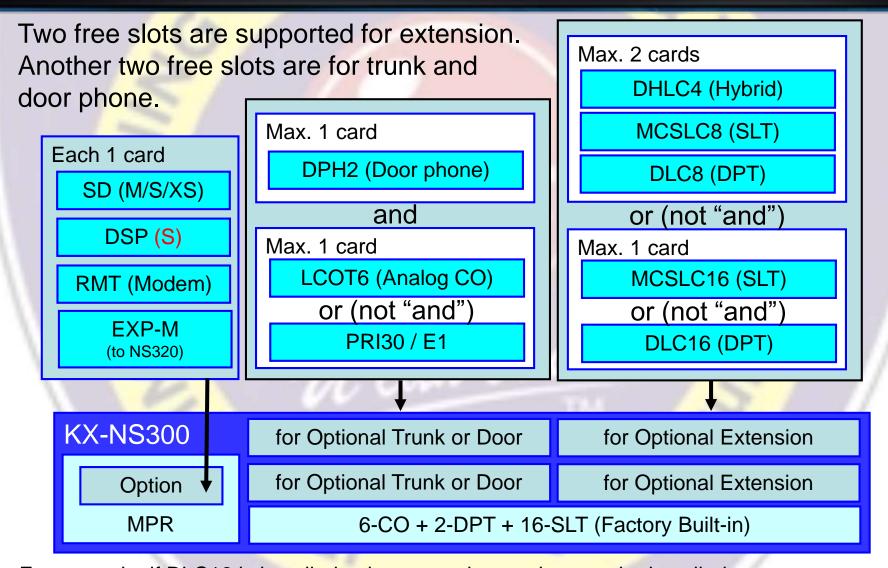
Built-in hardware for KX-NS320 is as follows.

- SLT 16-port with caller ID and message waiting
- Power supply / External battery port



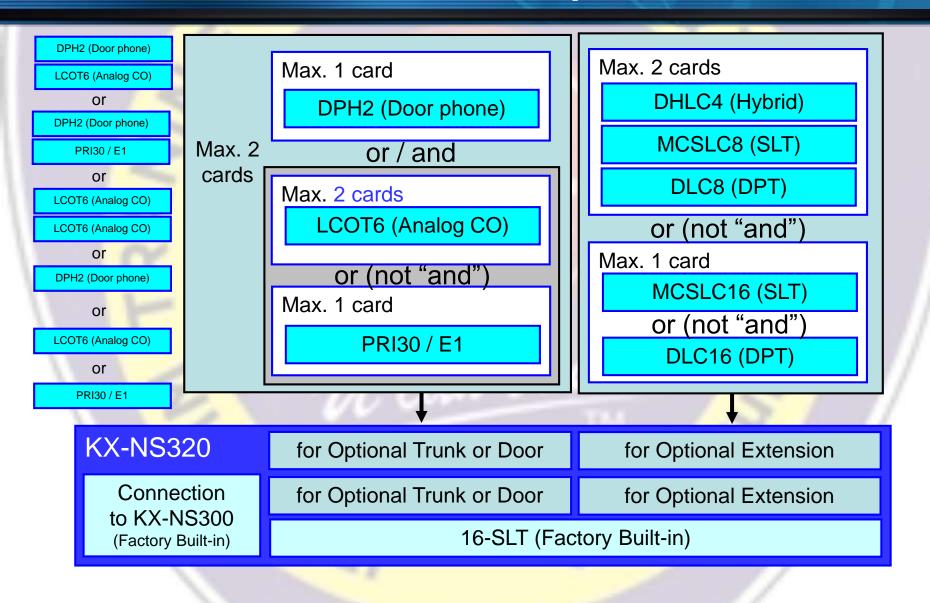
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16. Card Installation for Main Cabinet



For example, if DLC16 is installed, other extension card cannot be installed. DLC card including default 2-ch does not support KX-T74xx/KX-T75xx.

17. Card Installation for Expansion Cabinet



18. Capacity for Trunk

Туре	NS300 Built-in	NS300 Max.	NS300 + 1 NS320	NS300 + 2 NS320	NS300 + 3 NS320
Trunk (Legacy + IP)	6	52 (36+16)	82 (66+16)	112 (96+16)	142 (126+16)
Trunk (Legacy)	6	36 (30+6)	66 (30x2+6)	96 (30x3+6)	126 (30x4+6)
PRI30 / E1	0	30	60	90	120
A+B+P	6	12	24	36	48
A. Analog CO	6	12	24	36	48
B. BGM	6	6	6	6	6
P. Paging	6	6	6	6	6
Trunk (IP)	0	16			
SIP	0	16			
H.323	0	16			

VoIP DSP card and activation key provide IP trunk for H.323 and SIP.

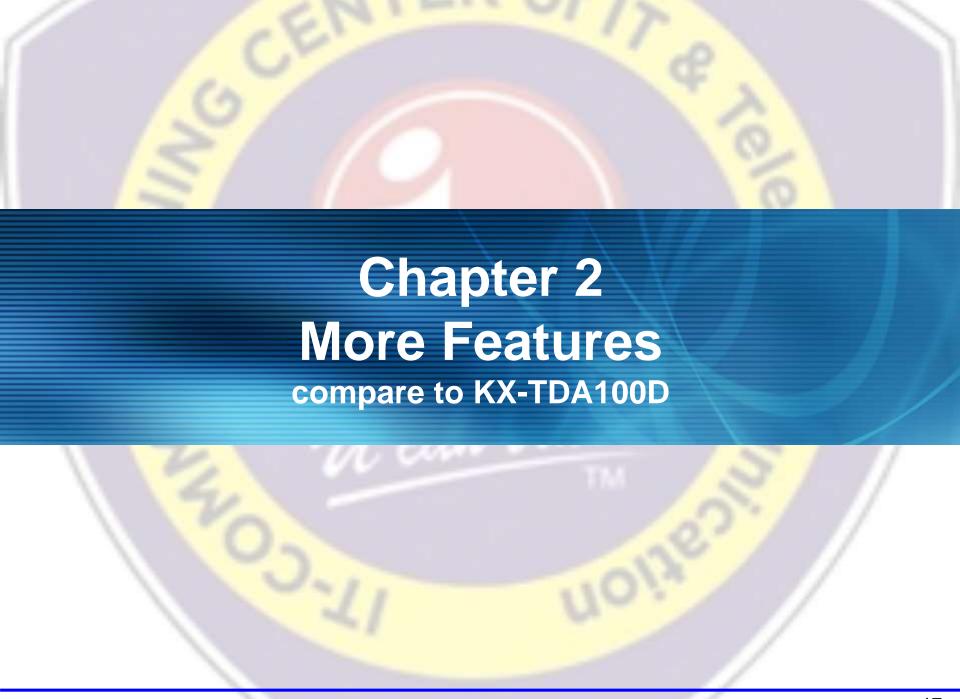
19. Capacity for Extension

Туре	NS300	NS300	NS300 +	NS300 +	NS300 +
	Built-in	Max.	1 NS320	2 NS320	3 NS320
Ext (Legacy + IP) without D-XDP	18	66	98	130	162
	(18+0)	(34+32)	(66+32)	(98+32)	(130+32)
Extension (Legacy) without D-XDP	18	34	66	98	130
	(16+2)	(32+2)	(64+2)	(96+2)	(128+2)
SLT	16	32	64	96	128
DTxx / T76xx	2	18	34	50	66
without D-XDP		(16x1+2)	(16x2+2)	(16x3+2)	(16x4+2)
T74xx / T75xx / T77xx	0	8	16	24	32
Ext (Legacy + IP) with D-XDP	20	72	112	152	192
	(20+0)	(40+32)	(80+32)	(120+32)	(160+32)
Extension (Legacy) with D-XDP	20 (16+4)	40 Not 18x2+16 because power supply	80 (40x2)	120 (40x3)	160 (40x4)
DTxxx / T76xx	4	24	48	72	96
with D-XDP	(2x2)	(40-16SLT)	(80-16x2SLT)	(120-16x3SLT)	(160-16x4SLT)
Extension (IP)	0	32			

VoIP DSP card and activation key provide IP extension for KX-NTxxx / KX-NT based software phone / KX-UTxxx / KX-UDTxxx / SIP Phone by other maker.

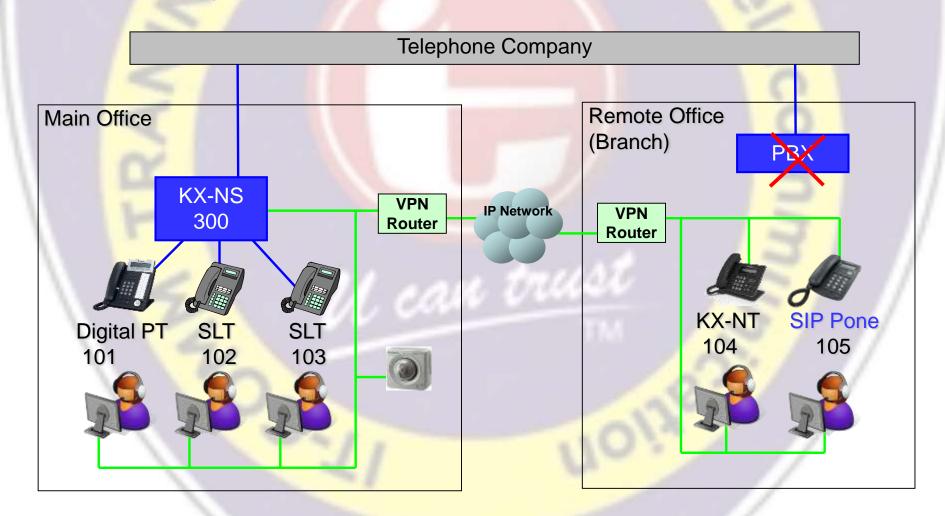
20. Capacity for Others

Type	NS300 Built-in	NS300 Max.	NS300 + 1 NS320	NS300 + 2 NS320	NS300 + 3 NS320
Portable Station			128 PS	1	
Cell Station (DPT I/F + IP I/F)	18 CS (2+16)	20 CS (4+16)	24 CS (8+16)	28 CS (12+16)	32 CS (16+16)
DPT I/F CS	2 CS	4 CS	8 CS	12 CS	16 CS
DPT I/F CS (2ch)	2 CS	4 CS	8 CS	12 CS	16 CS
DPT I/F CS (8ch)	0 CS	2 CS	4 CS	6 CS	8 CS
IP I/F CS (8ch)			16 CS		7
SIP I/F CS (4ch)			16 CS		
DISA	2ch	30ch by DSP			
Simple VM	2011	2ch			
UM : Built-in TVM	0ch	24ch by DSP + SD Card + Activation Key		on Key	
KX-TVM (DPT I/F)	4ch	4ch + 24ch 24 ch x 2 KX-TVM200		1200	
Door phone / Opener / Sensor	0/0/0	2/2/2	4/4/4	6/6/6	8/8/8



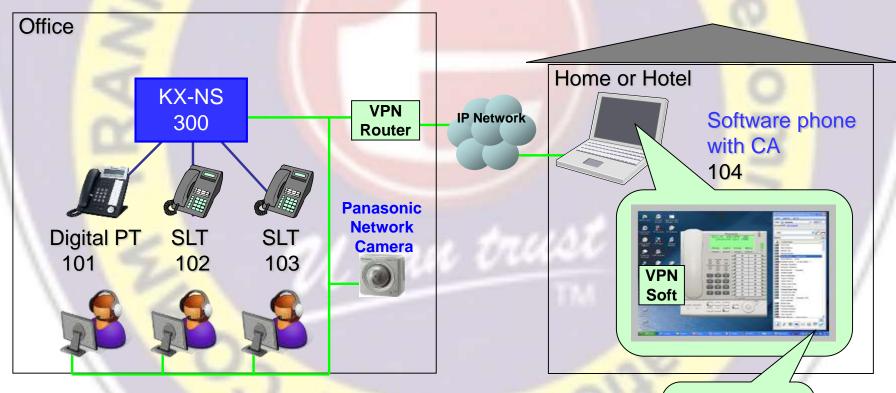
21. IP Extension

IP Phone including SIP Phone can be installed in remote office without PBX. Telephone charge can be saved for call between main office and branch.



22. IP Software Phone with UC (CA)

You can take your phone with your PC to your home or hotel. "Same function as Panasonic KX-NT" can be installed to your PC. Panasonic provides UC application Communication Assistant also.



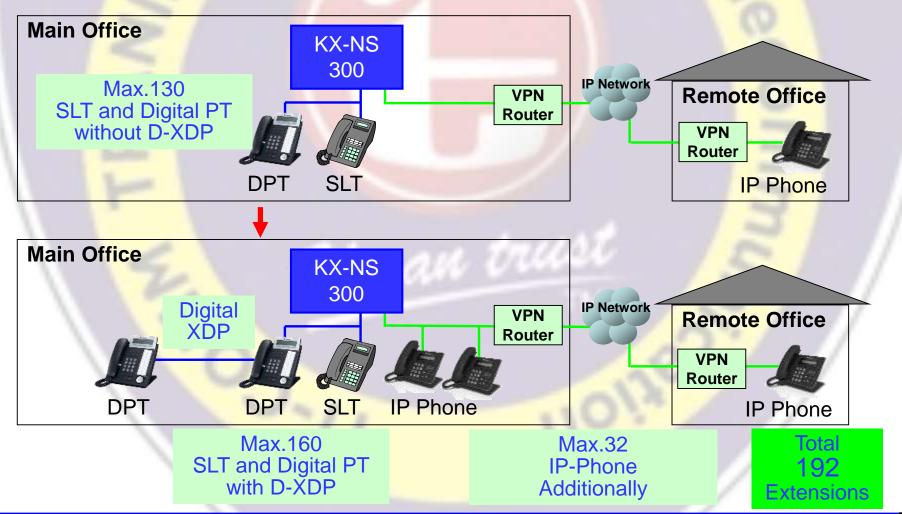
You (Boss) can control employees using software phone, CA, and network camera anytime anywhere.

Camera

23. Capacity Expansion by IP

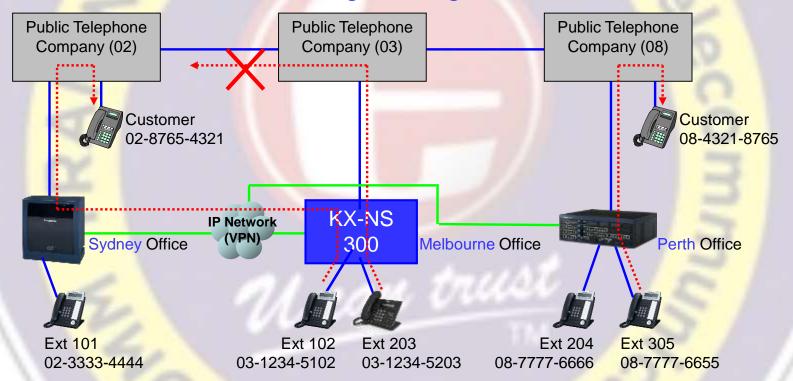
Currently you may need IP phone in remote office only.

However when your business expands in future, you can install 32 IP phones in main office and remote office.



24. PBX to PBX Connection using IP

You can use PBX to PBX H.323 Network to call extension in other PBX or customer in order to save charge of long distance call.



When extension users in Melbourne or Perth dials 0/9-02-8765-4321, call is routed automatically through PBX in Sydney.

- 02-xxxx-xxxx via PBX in Sydney
- 03-xxxx-xxxx via PBX in Melbourne
- 08-xxxx-xxxx via PBX in Perth

25. PBX to PBX Connection using IP

More features are supported for PBX to PBX call.
This feature works with KX-TDE-NCP version 4 or later and KX-NS PBX.

- <Calling extension in other PBX>
- BSS / Busy Override / Call Monitor / MSW / Soft Key Operation for Busy
- DND tone / DND Override / Soft Key Operation for DND
- Calling extension name display before answer
- Absent Message
- Internal Call Blocking (by COS-COS)



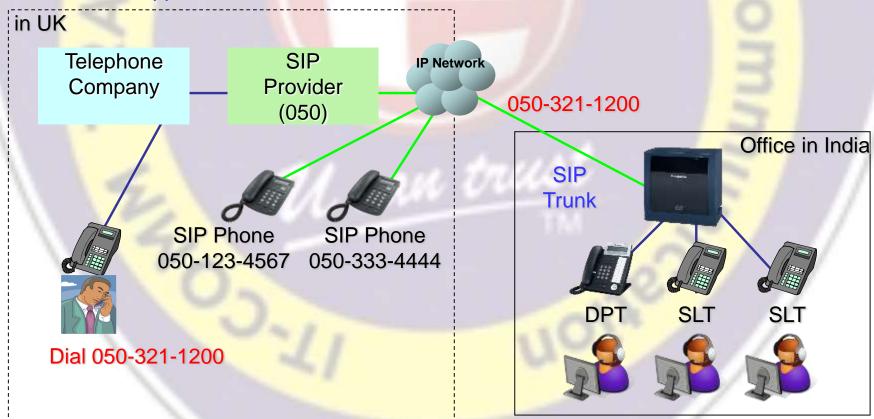
<Receiving a call>

- Automatic Answer for call from extension in other PBX
- Call Pickup for call to extension in other PBX
- Fwd as extension call for call from extension in other PBX
- Boss and Secretary (Fwd) for extension in other PBX
- ICD Group call with extension in other PBX (Ring / UCD / Priority Hunt)
 *) Longest idle is not supported.
- Call Redirect to VM in other PBX using VM Transfer Key before answer

26. SIP Trunk Service

Even when customer calls call center in UK (for example), KX-NS300 installed in your country can receive the call using SIP trunk service without high cost for international call.

Following is popular example in India using KX-TDE600. KX-NS300 can support same feature.



27. Hospitality using PT

Automatic answer of Panasonic PT (PBX Telephone) can work only for call from nurse. This is useful for hospitality.

Automatic answer can be disabled for calling from visitor.

- Class of service of extension caller (Not called party) can disable automatic answer feature of PT.
- Walking COS (temporal COS change) is also available for this feature.





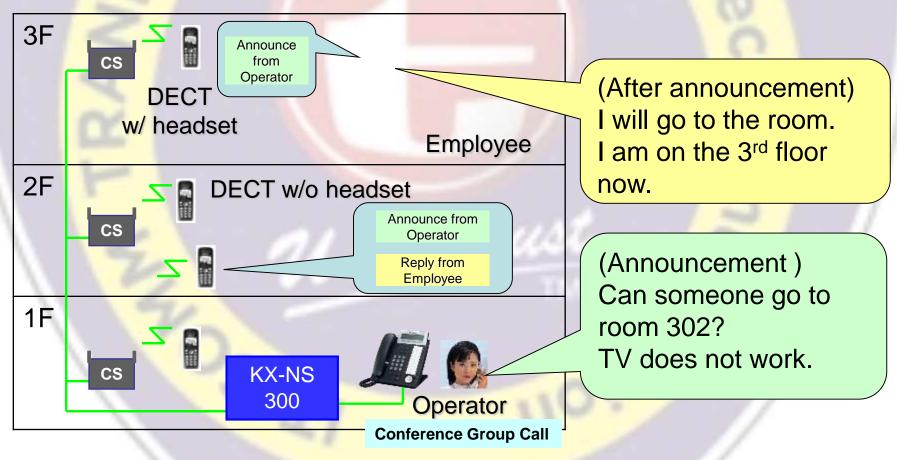
Another example for nurse

- (1) Ring at first. -> No answer
- (2) Re-try with Walking COS for automatic answer.

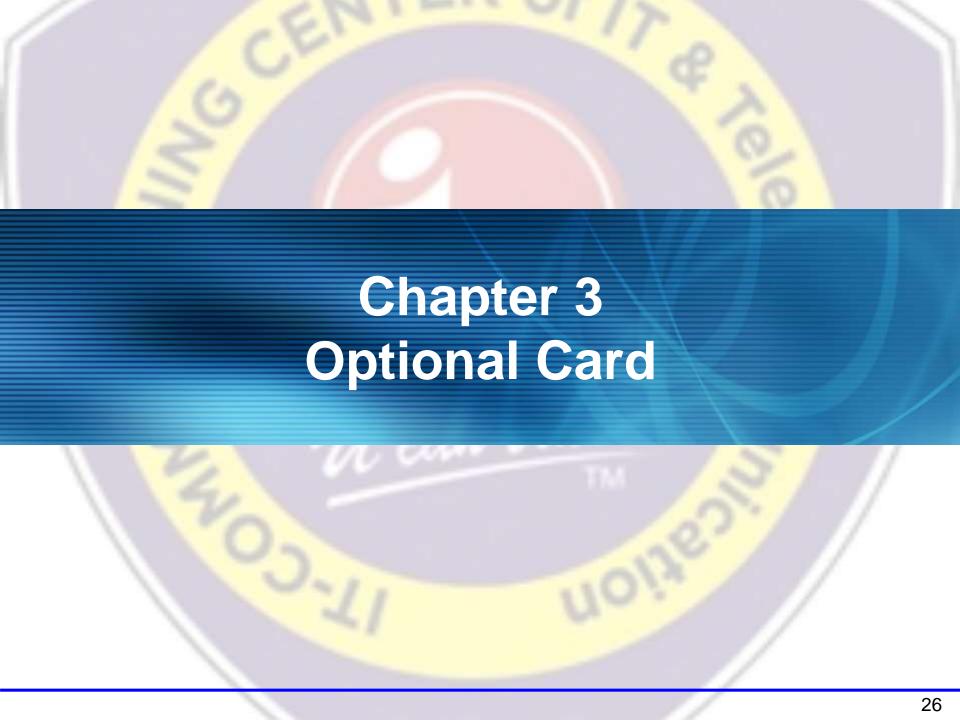
28. Paging over DECT Phone

Paging over Panasonic DECT phone is available for hospitality and so on using conference group call feature.

DECT Phone: KX-TCA175 / KX-TCA275 / KX-TCA185 / KX-TCA285 / KX-TCA385



All paged members can listen to both announcement and reply from some user.



31. Optional Card for Extension / Trunk

Model	Symbol	Specification
KX-NS5170	DHLC4	4-port for any Digital PT / Analog PT / CS (DPT I/F) / KX-TVM (DPT I/F) and 4-port SLT *) SLT port : without Caller ID and without Message Waiting
KX-NS5171	DLC8	8-port for Digital PT: KX-T76xx / KX-DTxxx and CS (DPT I/F) / KX-TVM (DPT I/F)
KX-NS5172	DLC16	16-port for Digital PT: KX-T76xx / KX-DTxxx and CS (DPT I/F) / KX-TVM (DPT I/F)
KX-NS5173	MCSLC8	8-port SLT I/F with Caller ID and Message Waiting
KX-NS5174	MCSLC16	16-port SLT I/F with Caller ID and Message Waiting
KX-NS5180	LCOT6	6-port Analog Trunk I/F with Caller ID
KX-NS5290	PRI30/E1	30-ch ISDN or E1 by one card

ISDN-BRI, T1, E&M and analog DID card are not supported. Pay tone feature is not available.

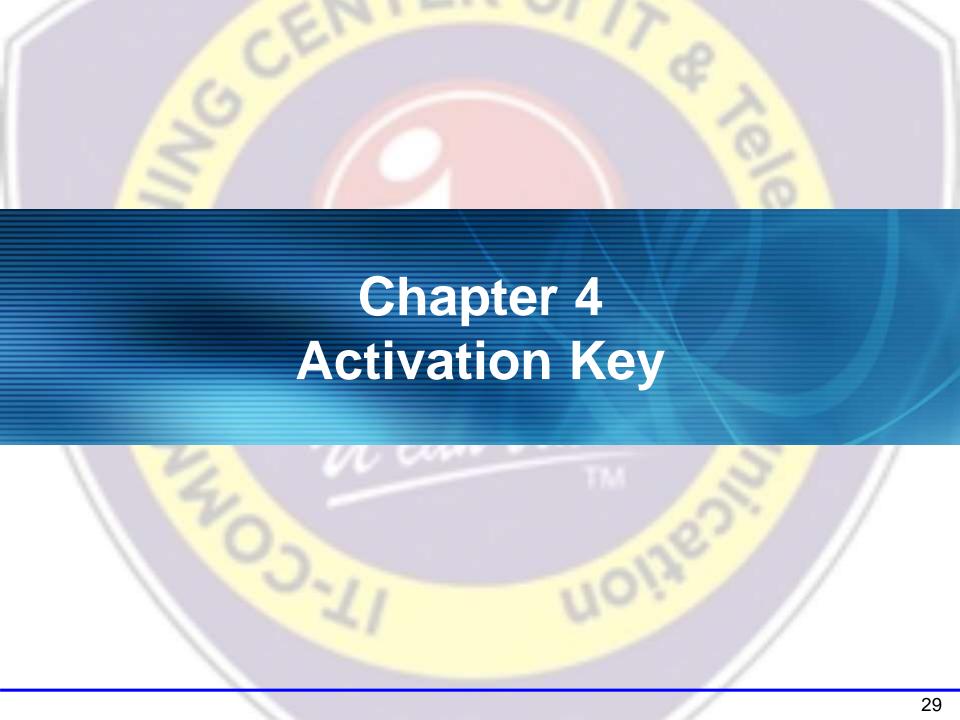
32. Optional Card for Others

Model	Symbol	Specification
KX-NS5110	DSP-S	DISA (30 ch) or VoIP (61 ch) or Built-in KX-TVM or mixture
KX-NS5162	DPH2	Each 2 I/F for Door phone / Opener / Sensor
KX-NS3134	SD(XS)	Built-in KX-TVM recording time : 40H
KX-NS3135	SD(S)	Built-in KX-TVM recording time : 200H
KX-NS3136	SD(M)	Built-in KX-TVM recording time : 400H
KX-NS5130	EXP-M	Connection for KX-NS320 3 units
KX-TDA0196	RMT	Modem for remote maintenance

<SMDR>

40,000 calls are recorded with above any SD card.

1,000 calls are recorded without SD card.



40. Activation Key: KX-NSF990

KX-NSF990 activation key is also required to use built-in KX-TVM or VoIP feature for KX-NS300.

KX- NSF990	DSP	SD Card
No Yes	No	No
No Yes	No	Yes
No	Yes	No
No	Yes	Yes
Yes	Yes	No
Yes	Yes	Yes

•	VoIP	Built-in KX-TVM	DISA	Simple VM	SMDR (Calls)
	N/A	N/A	2-	ch	1,000
	N/A	N/A	2-ch		40,000
	N/A	N/A	30-ch	2-ch	1,000
	N/A	N/A	30-ch	2-ch	40,000
ľ	Yes	N/A	30-ch	2-ch	1,000
Ĺ	Yes	Yes	30-ch	2-ch	40,000

KX-NS300 without KX-NSF990 is successor of KX-TDA. KX-NS300 with KX-NSF990 is successor of KX-TDE and KX-NCP.

41. Activation Key for VoIP

IP Trunk Activation Key as Trunk I/F Card

KX-NSM102	IP Trunk (SIP or H.323)	2 ch
KX-NSM104		4 ch
KX-NSM108		8 ch
KX-NSM116		16 ch

IP Extension Activation Key as Extension I/F Card

KX-NSM201	Panasonic KX-NT based IP Software phone	1 ch
KX-NSM205	(and KX-NT/UT hardware phone)	5 ch
KX-NSM210	000 000 000 000 000 000 000 000 000 00	10 ch
KX-NSM220		20 ch
KX-NSM501	Panasonic KX-NT/UT hardware phone	1 ch
KX-NSM505	(Not including Panasonic KX-NT700)	5 ch
KX-N <mark>SM510</mark>		10 ch
KX-NSM520	4-ch is pre installed.	20 ch
KX-NSM701	SIP hardware/software phone	1 ch
KX-NSM705	(including Panasonic KX-NT700)	5 ch
KX-NSM710	71 110	10 ch
KX-NSM720		20 ch

Activation keys in this page and following pages are for both KX-NS300 and KX-NS1000.

42. Activation Key for UM

UM (Built-in KX-TVM) Activation Key

KX-NSU399

KX-NSU002	UM : Automatic Two-way Recording by supervisor	1 AK for All supervisors
KX-NSU003	UM : Message Backup	1 AK
KX-NSU102	UM : Channel Expansion as TVM204 card	2 ch
KX-NSU104	2-ch is pre-installed.	4 ch
KX-NSU201	UM : E-mail	1 mailbox user
KX-NSU205		5 mailbox user
KX-NSU210		10 mailbox user
KX-NSU220		20 mailbox user
KX-NSU299		All mailbox user
KX-NSU301	UM:	1 extension user
KX-NSU305		5 extension user
KX-NSU310	Two-way Recording by user	10 extension user
KX-NSU320		20 extension user

All extension user

43. Activation Key for PBX Features

PBX Extension Feature Activation Key

KX-NSE101	Extension and Mobile parallel	1 extension user
KX-NSE105	feature	5 extension user
KX-NSE110		10 extension user
KX-NSE120		20 extension user

PBX to PBX Network Activation Key

KX-NSN002	QSIG Network with Enhance Feature
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System Feature Activation Key

KX-NSF101	3rd party CTI Interface
KX-NSA020	Multiple CTI Connection
KX-NSF201	Built-in web call center report Announcement of waiting order in queue

44. Activation Key for UC (Communication Assistant)

CA Activation Key

KX-NSA201	CA Pro	1 extension user
KX-NSA205		5 extension user
KX-NSA210		10 extension user
KX-NSA240		40 extension user
KX-NSA249		128 extension user
KX-NSA301	CA Supervisor	1 extension user
KX-NSA401	CA Operator Console	1 extension user
KX-NSA901	CA Network Plug-in	1 CA user
KX-NSA905		5 CA user
KX-NSA910		10 CA user
KX-NSA940	The call this	40 CA user
KX-NSA949	1/10 N CASIAN	128 CA user
KX-NSA010	CA Thin Client Server Connection	

45. Pre-Installed Activation Key

Following feature is available without buying activation key and without expiration.

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CA Basic (Built-in server / External server) : All users

46. Pre-Installed Activation Key for Trial

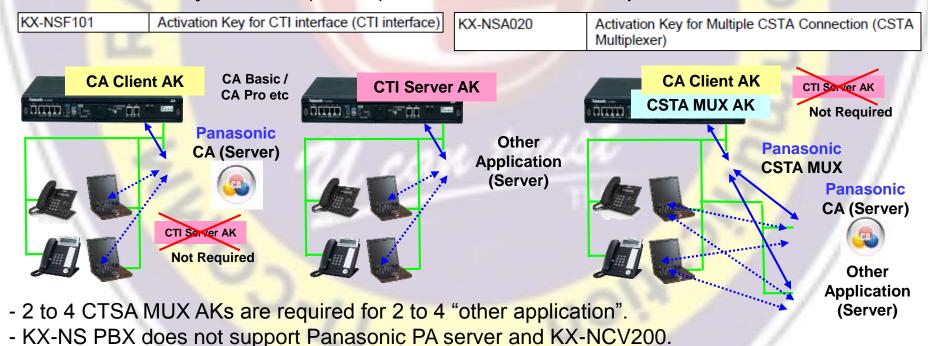
60-day trial is available before buying activation key for followings.
60-day can start anytime for each feature. (not start after default clear)
Trial cannot be used repeatedly. (only one time)

UM (Built-in KX-TVM): Automatic Two-way Recording by Supervisor		
UM (Built-in KX-TVM) : Message Backup		
UM (Built-in KX-TVM) : E-mail (128 mailbox users)		
UM (Built-in KX-TVM): 2 Way Recording (30 extension users)		
Mobile Extension (30 extension users)		
CA PRO (128 users)		
CA Supervisor (1 user)		
CA Operator (1 user)		
CA Thin Client Server Connection		
3rd party CTI Interface		
Multiple CTI Connection		
Built-in ACD Report / Announcement of waiting order in queue		

47. Activation Key - Condition

Activation key is required for CTI server except CA.

- When other CTI server application is connected with KX-NS PBX directly, activation key for CTI (server) interface is required.
- When other CTI server application is connected through CSTA MUX, activation key for CSTA MUX is required.
 Activation key for CTI (sever) interface is NOT required in this case.



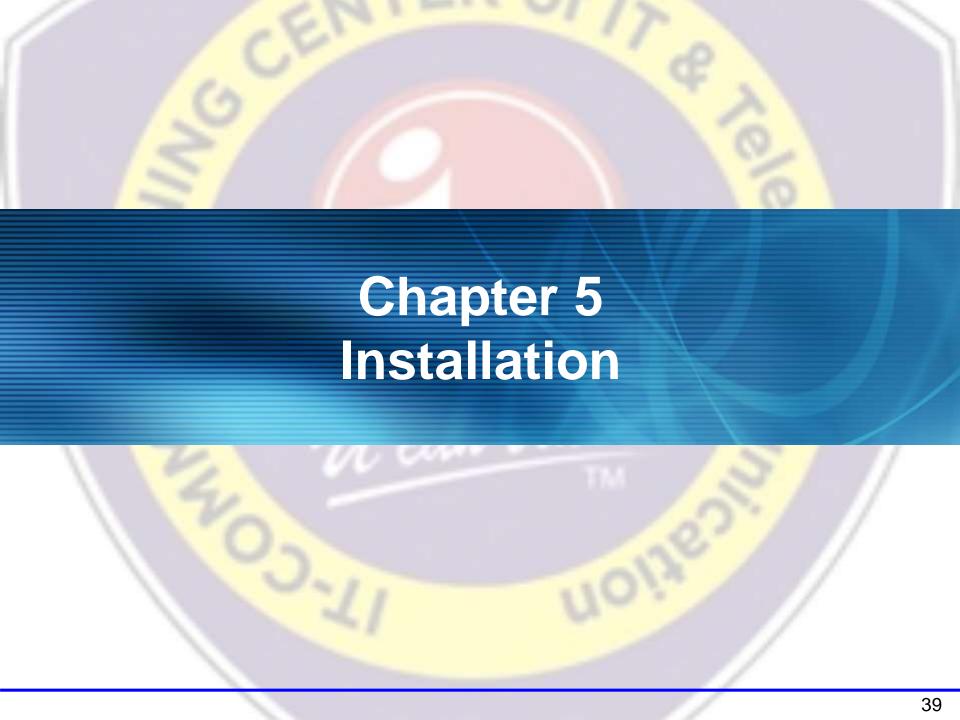
- AK is not required for CA Call Accounting because this uses SMDR interface.
- AK is required for application on Panasonic TAPI TSP.

48. Activation Key - Condition

Following activation key for KX-NS1000 is not required for KX-NS300.

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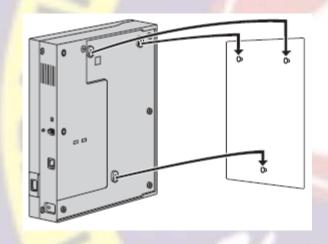
KX-NSM005	As memory for 31- 50 IP extensions
KX-NSM010	As memory for 31-100 IP extensions
KX-NSM030	As memory for 31-300 IP extensions
KX-NSM099	As memory for 31-640 IP extensions



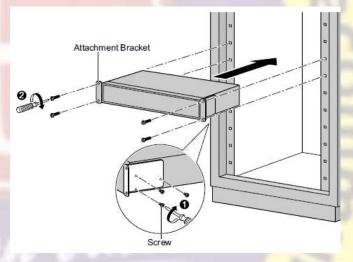
51. Location of Installation

KX-NS300 and KX-NS320 can be installed on wall or in 19 inch rack.

KX-A437X is required for 19 inch rack.

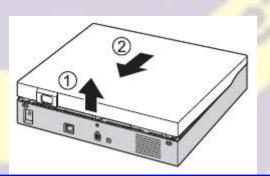


On Wall



in 19 inch rack

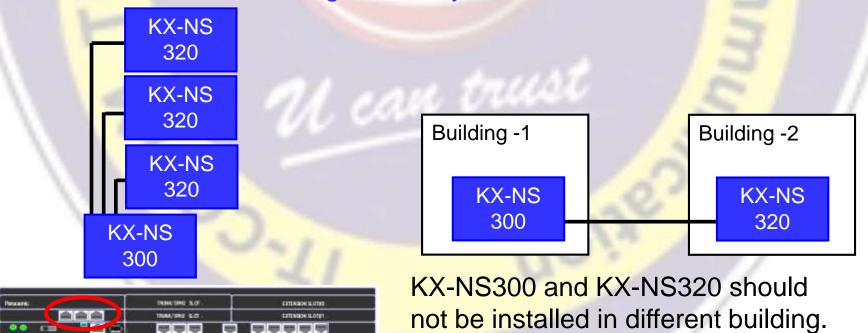
It is required to open the top cover of cabinet to install optional cards.



52. Connection with Expansion Cabinet

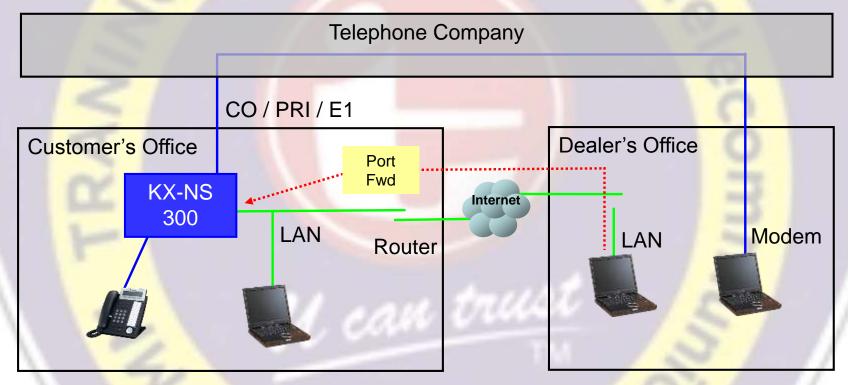
KX-NS300 and KX-NS320 can be connected directly using straight LAN cable (CAT5E). Hub is not required.

- This LAN cable is not shipped with KX-NS320.
- IP protocol is not used even using LAN cable.
 Communication protocol is similar to connection for KX-TDA600 and KX-TDA620.
- Length of LAN cable has to be less than 3m because IP protocol is not used and because avoiding trouble by thunder.



53. Programming using PC

Programming using PC is available through LAN or modem.



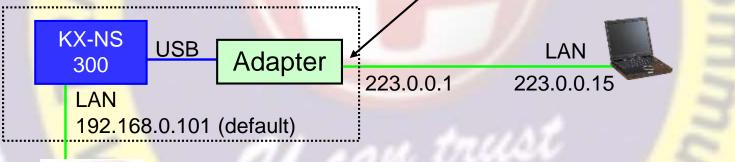
Analog modem is available with KX-TDA0196.
ISDN 64k digital modem is available through PRI card of KX-NS300 without KX-TDA0196.

Port forwarding is required for router to connect through LAN from remote location. Port number is 8080.

54. Programming through USB

Independent maintenance port like KX-NS1000 is NOT supported. However KX-NS300 USB port with external adapter works as independent maintenance port.

KX-NS300 with adapter supports DHCP server function by default like KX-NS1000.





Panasonic System Networks confirmed that following adapters worked with KX-NS300.

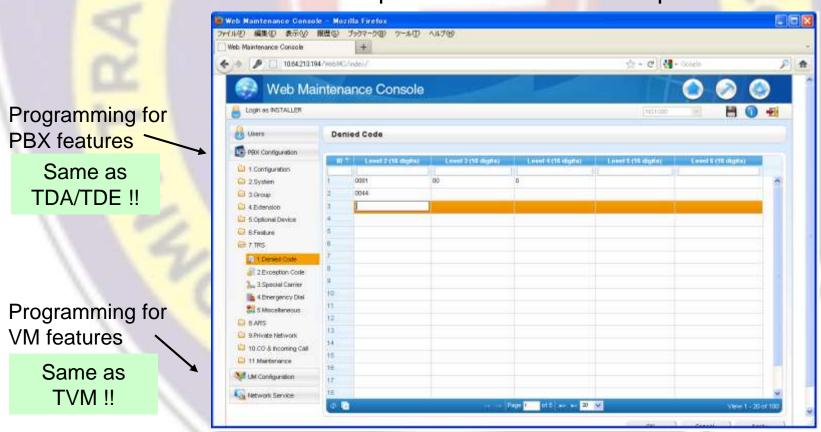
Maker	Model Name
BUFFALO	LUA3-U2-ATX
IO DATA	ETX3-US2
PCI (Planet)	UE-100TX-G3

These are using same component. AX88772 by ASIX

55. Web Programming

Built-in web server supports PBX and VM all programming.

- Programming is very easy because programming method is basically same as KX-TDA-TDE-NCP and KX-TVM.
- It is not required to install application (Programming Tool) because Web. MS Internet Explorer and so on are required.



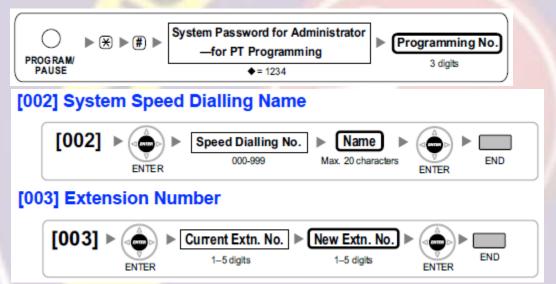
56. Programming Tool

Application (Programming Tool) is required to connect through modem. GUI and Operation for programming are same as web programming.



57. Programming using PT

Operation for programming is same as KX-TDA100D.



KX-T77xx N/A KX-T77xx N/A KX-T74xx N/A KX-T75xx KX-T76xx 3 or 6 line KX-DT3xx LCD KX-DT5xx Model only KX-NT3xx KX-NT5xx

Followings are added newly.

[191] IP Address Reference



[194] UM Auto Configuration





- Confirm IP address of PBX using PT.
- Connect PBX using customer's PC by Web for example.

58. Virtual IP Card

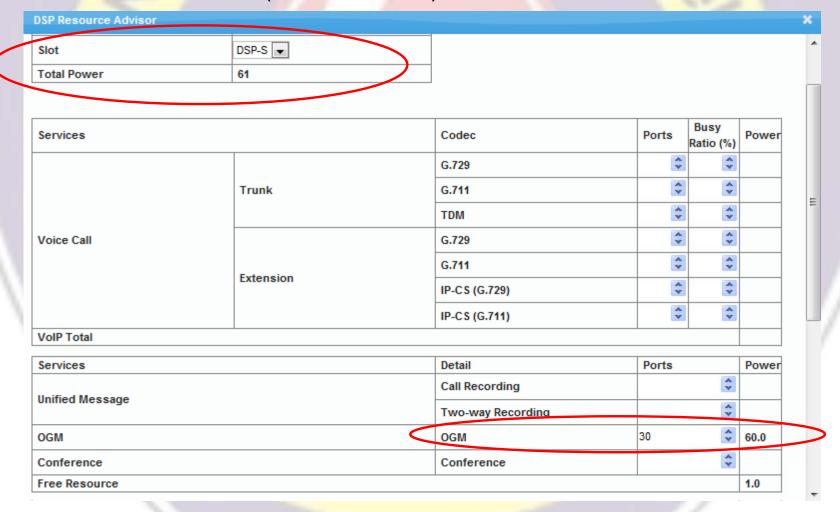
Capacity of Virtual IP card is as follows.

Virtual IP Card for	Capacity
Trunk (SIP or H.323)	4-ch x 4-card
Extension (KX-NT or KX-UT or SIP)	8-ch x 4-card



59. VolP DSP Card

Capacity of DSP can be confirmed using programming tool without PBX before installtion. (Off-line mode)



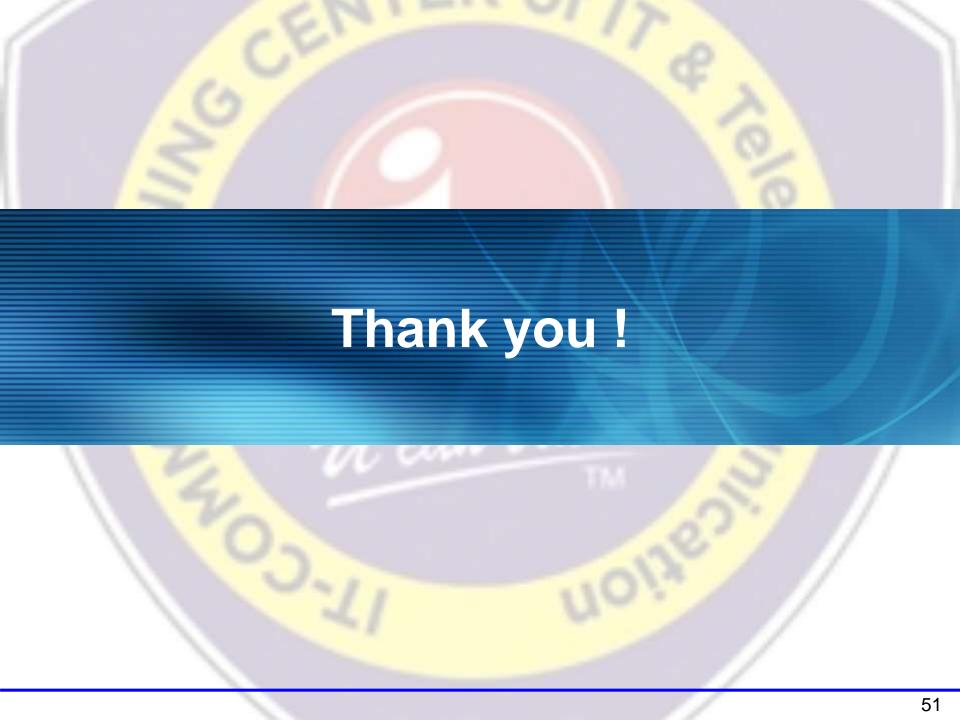
Chapter 6 Difference from KX-NS1000

61. Feature Difference

KX-NS300 and KX-NS1000 have same specification. It is like KX-NCP and KX-TDE.

Feature difference is as follows.

Feature	KX-NS300	KX-NS1000
MNT port	No but USB port with adapter	Yes
WAN port	Version 2 (Study) by optional card	Yes
RS232 port	No but SMDR through LAN	Yes
BRI	Version 2 (Study)	Yes
One-look network	Version 2 (Study)	Yes
Fax to e-mail	N/A	Yes
Sensor to e-mail	Yes	No
Modem	Yes	No
PT Program	Yes	No

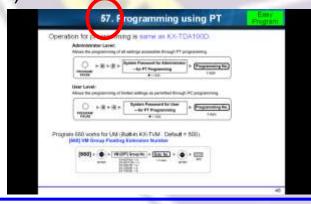


Date	No. (*)	Change
Aug 5	All	First draft
Sep 6	2	"KX-NS300 provides same features and same operations as KX-TDA100D."
	11	Cable: 5m to 3m
	17	Example of trunk card combination was added.
0	16&20	DSP-M/L is not supported. DISA Max. is 30ch.

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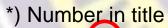


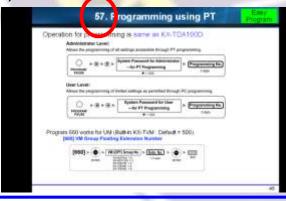
Date	No. (*)	Change
Oct 15 (Oct 18)	11/14/32	Explanation for cable is moved to No.52. LAN cable is used. It must be less than 3m.
13	23	Not 128 IP extension. 32 IP extension is correct. (Wrong explanation was revised.)
removed because only 16-ch works.		PRI adapter KX-NS8290 and E1 adapter KX-NS8188 were removed because only 16-ch works. (Other PPT for details keeps this explanation.)
1	52/54	Page was added.
	57	Available PT for PT programming was added.
	21	Wear true



Date	No. (*)	Change
Nov 12	13	2-ch DISA / Simple VM : 120 min
1 2	20	SIP I/F CS: 4ch (Not 8ch)
1 4	61	Feature difference from KX-NS1000

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Date	No. (*)	Change
Dec 3	3/51/56	Picture was revised.
- / .	13/14/15	Change to page 14/15/13.
1 <	13	XDP and Digital XDP are available for DHLC4.
1 <	32	Explanation was revised.
	40-45	Explanation for KX-NSF990 was revised.
	52	KX-NS300 - KX-NS320 connection : Straight LAN cable
Will b	53	ISDN 64k digital modem is available.
	57	PT program supports IP address reference.
11 1	4.1	The part truck
1111	60	



Date	No. (*)	Change
Jan 14	13	KX-TDA0300 and KX-TDA0350 are not supported.
1 2	14	Picture was revised because EXP-M is not factory built-in.
1 <	19	Explanation was revised for D-XDP.
1 <	58	This page was added for virtual IP card.
	59	This page was moved from page 33.
	61	KX-NS1000 does not support sensor to e-mail feature. (Network camera integration)

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